PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P06490PC00	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/SE2003/002095	International filing date *(day/month/year)* 30-12-2003	Priority date *(day/month/year)* -
International Patent Classification (IPC) or national classification and IPC See Supplemental Box		

Applicant

Telefonaktiebolaget LM Ericsson (publ) et al

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of __6__ sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

   a. ☒ *(sent to the applicant and to the International Bureau)* a total of __5__ sheets, as follows:

   ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

   ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) _____ , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

   ☒ Box No. I   Basis of the report

   ☐ Box No. II   Priority

   ☐ Box No. III   Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

   ☐ Box No. IV   Lack of unity of invention

   ☒ Box No. V   Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

   ☐ Box No. VI   Certain documents cited

   ☐ Box No. VII   Certain defects in the international application

   ☒ Box No. VIII   Certain observations on the international application

Date of submission of the demand 27-06-2005	Date of completion of this report 12-04-2006
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Form PCT/IPEA/409 (cover sheet) (April 2005)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Cover sheet

International patent classification (IPC)

H04B 7/26 (2006.01)
H04L 12/28 (2006.01)
H04L 12/56 (2006.01)

Box No. I	Basis of the report

1. With regard to the **language**, this report is based on:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into _____ ,
   which is the language of a translation furnished for the purposes of:

       ☐ international search (Rules 12.3(a) and 23.1(b))

       ☐ publication of the international application (Rule 12.4(a))

       ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

   ☐ the international application as originally filed/furnished

   ☒ the description:

       pages <u>1-3, 5-10</u>_____ as originally filed/furnished

       pages* <u>4</u>_____ received by this Authority on <u>17-02-2006</u>

       pages* _____ received by this Authority on _____

   ☒ the claims:

       pages _____ as originally filed/furnished

       pages* _____ as amended (together with any statement) under Article 19

       pages* <u>11-14</u>_____ received by this Authority on <u>17-02-2006</u>

       pages* _____ received by this Authority on _____

   ☒ the drawings:

       pages <u>1-3</u>_____ as originally filed/furnished

       pages* _____ received by this Authority on _____

       pages* _____ received by this Authority on _____

   ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

       ☐ the description, pages _____

       ☐ the claims, Nos. _____

       ☐ the drawings, sheets/figs _____

       ☐ the sequence listing *(specify)*: _____

       ☐ any table(s) related to the sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

       ☐ the description, pages _____

       ☐ the claims, Nos. _____

       ☐ the drawings, sheets/figs _____

       ☐ the sequence listing *(specify)*: _____

       ☐ any table(s) related to the sequence listing *(specify)*: _____

*   *If item 4 applies, some or all of those sheets may be marked "superseded."*

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-29	YES
	Claims		NO
Inventive step (IS)	Claims	1-29	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-29	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The object of the invention to remedy the drawbacks of transmitting speech or other short packages over a communication network with relatively large overhead per package.

Reference is made to the following documents:
D1: WO 0076090 A1
D2: US 2001004359 A1
D3: US 2002041566 A1
D4: US 6496499 B1

Document D1 relates to TDMA systems, and particularly but not exclusively to an EDGE system for the transmission of voice generated by a GSM speech encoder.

Claims 1-29:
From D1, which is considered to represent the most relevant document, a method is known for transmitting data packets over a communications network, utilizing transmittal protocol packets comprising a header, which in turn comprises an address field, and a data field, characterised in collecting and inserting several data packets from several users active on the communications network into the data field of a transmittal protocol packet, and transmitting the transmittal protocol packet (see D1 page 34 line 19 - page 35 line 11, page 7 lines 26-30 and page 9 lines 10-15).

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

However, the cited documents represent the general state of the art.
The invention defined in claims 1-29 is not disclosed by any of these documents.
The cited prior art does not give any indication that would lead a person skilled in the art to the claimed method, system and device for transmitting data packets over a communication network, wherein each inserted data packet is associated with an individual address.

Therefore, the claimed invention is not obvious to a person skilled in the art.
Accordingly, the invention defined in claims 1-29 is novel and is considered to involve an inventive step. The invention is industrially applicable.

| Box No. VIII   Certain observations on the international application |

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claims 14 and 28:
The phrase "local area network" in these claims must be replaced by "network", since the word network is used in claim 1 and 27.

Claims 22 and 24:
These claims are "Device claims" and referring to "any of the preceding claims" which includes "Method claims". Therefore, these claims must be adjusted in order to refer to claims 19-21 respective 19-23.

The Swedish Patent Office
International Application

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the collision risk. However it does not address the inherent problems of the overhead of the MAC protocol, and the capacity problems this leads to as regards transmission of speech.

5   BRIEF DESCRIPTION OF THE INVENTION
The aim of the present invention is to remedy the drawbacks of transmitting speech or other short packages over a communication network with relatively large overhead per package.

10   This aim is solved by the characterising features of claims 1, 17, 18, 29, 26 and 27.

Advantageous features of the invention are found in the dependent claims.

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According to the present invention the main aim is to reduce the large overhead encountered when sending short packets such as speech in a local area network, using transmittal protocols such as the MAC protocol, which introduces a large overhead per packet.

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This aim is solved by collecting several data packets in one data transmittal protocol packet, transmitting this protocol, and receiving the protocol wherein each of the several data packets are addressed to specific destinations.

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The collection and transmittal of several data packets in one transmittal protocol packet, such as a MAC packet, will provide a reduction of the amount of overhead information per transmitted data packet, such as speech, thereby increasing the efficiency by which a radio channel is
30   used. Also the delay caused by the back-off and SIFS intervals will be reduced, counted on a per packet basis. Also, in the event that a MAC packet has been scheduled to wait long before it is transmitted, which could be the case with DCF in the downlink, it can compensate for this

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PATENT CLAIMS

1. Method for transmitting data packets over a communications network, utilizing transmittal protocol packets comprising a header, which in turn comprises an address field, and a data field, characterised in collecting and inserting several data packets from several users active on the communications network into the data field of a transmittal protocol packet, and transmitting the transmittal protocol packet, wherein each inserted data packet is associated with an individual address.

2. Method according to claim 1, characterised in using a broadcast or group address in the header of the transmittal protocol and attaching an individual address to each data packet in the data field.

3. Method according to claim 1, characterised in arranging the individual addresses in the header of the transmittal protocol.

4. Method according to any of the preceding claims, characterised in that the transmittal protocol is a MAC protocol.

5. Method according to claim 4, characterised in that the MAC protocol is a Carrier Sense Multiple Access protocol.

6. Method according to any of the preceding claims, characterised in that the data packets comprises speech packets.

7. Method according to any of the preceding claims, characterised in the further step of storing a number of data packets before insertion into the data field.

8. Method according to claim 7, characterised in storing data packets collected within a defined time interval.

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9. Method according to claim 7, characterised in storing a defined number of data packets.

5   10.   Method according to claim 7, characterised in storing data packets filling up a defined data field size.

11.   Method according to claim 7, characterised in the further step of storing data packets from several active users in
10   individual buffers connected to individual inputs of a time multiplex unit.

12.   Method according to claim 11, characterised in storing data packets from a defined number of active users.

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13.   Method according to claim 8, characterised in the further step of forwarding multiplexed data packets to a packetizing unit for insertion into the data field.

20   14.   Method according to any preceding claim, characterised in that the local area network is wireless.

15.   Method according to claim 10, characterised in that the collection is performed in an access point.

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16.   Method according to any of the preceding claims, characterised in that the transmittal protocol containing data packets from several users is given transmission priority.

30   17.   Method of receiving data packets transmitted according to any of the claims 1 – 16, characterised in receiving the transmittal protocol packet, identifying the address of the header of the transmittal protocol packet, and if correct, collecting at

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least one of the data packets in the data field of the transmittal protocol packet.

18.   Computer program product comprising computer code means and/or software code portions for making a computer or processor perform the steps of any of the claims 1 – 17.

19.   Device for transmitting data packets over a communications network, utilizing transmittal protocol packets comprising a header, which in turn comprises an address field, and a data field, characterised in means for collecting and inserting several data packets from several users active on the communications network into the data field of a transmittal protocol packet, means for transmitting the transmittal protocol packet and means for associating an inserted data packet with an individual address.

20.   Device according to claim 19, characterised in using a broadcast or group address in the header of the transmittal protocol and means for attaching an individual address to each data packet in the data field.

21.   Device according to claim 19, characterised in means for arranging the individual addresses in the header of the transmittal protocol.

22.   Device according to any of the preceding claims, characterised in that the transmittal protocol is a MAC protocol and that the data packets comprises speech packets.

23.   Device according to claim 22, characterised in that the MAC protocol is a Carrier Sense Multiple Access protocol.

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24.   Device according to any of the preceding claims, characterised in the means for storing a number of data packets before insertion into the data field.

5   25.   Device according to claim 24, characterised in means for storing data packets from several active users in individual buffers connected to individual inputs of a time multiplex unit.

26.   Device for receiving data packets transmitted from the device

10   according to any of the claims 19 – 25, characterised in means for receiving the transmittal protocol packet, means for identifying the address of the header of the transmittal protocol packet, and if correct, means for collecting at least one of the data packets in the data field of the transmittal protocol packet.

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27.   System for handling data packets on a communications network, utilizing transmittal protocol packets comprising a header, which in turn comprises an address field, and a data field, comprising means for collecting and inserting several data

20   packets from several users active on the communications network into the data field of a transmittal protocol packet, means for transmitting the transmittal protocol packet, means for associating an inserted data packet with an individual address, means for receiving the transmittal protocol packet, means for

25   identifying the address of the header of the transmittal protocol packet, and if correct, means for collecting at least one of the data packets in the data field of the transmittal protocol packet.

28.   System according to claim 27, characterised in that the local

30   area network is wireless.

29.   System according to claim 28, characterised in that the collection is performed in an access point.

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